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INSECT AND DISEASE CONDITIONS AT FT. RUCKER, ALABAMA

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SOUTHEASTERN AREA, STATE AND PRIVATE FORESTRY
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by

Terrence J. Rogers and Paul Peacher^{1/}Insect Conditions -

During the last ground survey of the Ft. Rucker Forest by Forest Insect and Disease personnel (March 1-2, 1976), mixed populations of *Ips* engraver beetles, black turpentine beetles, and southern pine beetles were causing light timber losses to pine stands previously damaged by Hurricane Eloise in 1975. The most serious of these pests was the southern pine beetle, *Dendroctonus frontalis* Zimm. During the summer of 1976, this insect caused extensive timber losses^{2/}.

Our most recent ground survey of the Ft. Rucker Forest (Feb. 8-9, 1977) showed that *Ips* engraver and black turpentine beetle populations were of little or no immediate importance since they were observed in low numbers.

Again, the most serious pest detected at Ft. Rucker was the southern pine beetle. This insect is of major concern because it is capable of rapid population build-ups.

At the time of this ground survey, six southern pine beetle brood trees were identified. Of these, five were shortleaf pine averaging 9-11 inches in d.b.h., and one was a longleaf pine with an estimated d.b.h. of 12 inches. Because of the abundant supply of moisture in the soil and cool temperatures, all of the brood trees, with the exception of the longleaf pine, were still green or just beginning to fade. Other undiscernible green top southern pine beetle infested trees were no doubt present, making it impossible to assess either the volume affected or the population trend. Examination of bark samples did reveal, however, that the overwintering southern pine beetle broods were healthy and did survive with minimum mortality. One bark sample also revealed adult beetles beginning to emerge.

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^{2/} Personal communication at the time of the ground survey with Robert Pouncey.

Of particular concern was the fact that several of the green infested brood trees were located in the low bottom lands bordering the Lake Tholocco Spillway. We were told that these bottom lands are often covered with standing water and have a history of southern pine beetle infestations. Pines in wet bottom lands often come under stressed conditions and become more susceptible to beetle attack. Therefore, it seems reasonable to assume that the southern pine beetle will continue to be a problem at Ft. Rucker later this spring and summer.

Suppression of the southern pine beetle should be achieved by using one or a combination of the three following methods. The methods are listed in order of priority.

- (1) Removal of Infested Trees by Commercial Sale or Administrative Use. When infested trees of merchantable size are accessible, they should be removed by commercial sale or administrative use procedures. Logging of the infested material should begin immediately. Contract time limits should insure rapid removal.

Where practical on larger spots, and if host type is present, a 40 to 70 foot uninfested buffer strip should be marked and cut adjacent to and ahead of the most recently infested trees. This practice is effective in reducing the possibility of "Breakouts." When only a small volume of infested merchantable material occurs in a spot, noninfested trees surrounding the spot may be marked to provide an operable cut.

The order of priority for removing beetle infested timber from a spot should be as follows:

Trees having nearly developed broods. (Usually the red and fading trees.)

Trees having young broods. (Usually the green infested and fading trees.)

Trees in the buffer zone.

When a potential exists for Ips engraver build-ups, slash should be lopped and scattered, making it too dry for brood development.

- (2) Piling and Burning. Unmerchantable or inaccessible southern pine beetle infestations can be suppressed by cutting, piling, and thoroughly burning the bark of infested trees. The entire bark surface must be thoroughly burned to insure effective control. The order of priority for cutting, piling and burning infested trees particularly in large spots is the same as paragraph (1) under removal of infested trees by commercial sale or administrative use. Cutting a buffer strip is not recommended. To reduce the possibility of "Breakouts" every effort should be made to locate and treat all green infested trees during the piling and burning operation.
- (3) Chemical Control. Chemical formulation recommended for southern pine beetle control is a 1/2 percent Lindane spray with No. 2 fuel oil as the carrier. This may be formulated from a 20 percent Lindane emulsifiable concentrate or oil concentrate at the rate of 11 pints of concentrate in enough fuel oil to make 55 gallons of spray. (Ratio of one part 20 percent Lindane EC to 39 parts No. 2 diesel fuel.)

Cut, limb, and buck all infested trees into workable lengths. Spray the infested bark surface to the point of run-off. A compressed air sprayer (3 gallon capacity or equivalent) is an ideal applicator. Infested logs must be turned two or three times to insure complete treatment of infested bark. Spray stumps and bark removed by woodpeckers. Low-pressure sprayers may be used to treat large, accessible infestations.

The order of priority for cutting and spraying infested trees in large spots is the same as paragraph (1) under removal of infested trees by commercial sale or administrative use. Cutting a buffer strip is not recommended. To reduce the possibility of "Breakouts", every effort should be made to locate and treat all green infested trees during the chemical control operation.

Never spray trees from which southern pine beetle brood has emerged. Natural enemies of the southern pine beetle in these trees can then complete their development. To prevent aerial spotters from mapping treated spots, cut trees with red needles from which beetles have emerged. Extreme caution should also be exercised to prevent pesticide contamination to water, particularly in poorly drained sites.

- (4) Re-examination of Treated Areas. Re-examine areas where infested trees were removed by commercial sales, piled and burned, or chemically treated within two or three weeks after treatment to check for additional infested trees. If additional trees are found, treat them.

Disease Conditions -

Four disease problems were found that warrant some attention and discussion. These are fusiform rust, annosus root rot, Littleleaf, and needle cast.

Fusiform rust, caused by *Cronartium fusiforme*, was the most widespread and serious disease problem noted. Many trees with stem cankers were broken off by the winds of Hurricane Eloise in 1975. Slash and loblolly pine were hard hit by this disease. Some cankers were even noted on longleaf pine which is a relatively resistant species.

Ft. Rucker is in a high rust hazard zone, partly because of all the scrub oaks growing in the area. Oak trees are the alternate host of this disease and thus are an important link in the disease cycle. In some areas it appeared that recent prescribed burns were not hot enough to kill the scrub oak understory. This could indirectly increase the amount of inoculum available to infect pines.

Annosus root rot, caused by *Fomes annosus*, was probably the next most serious forest disease problem at Ft. Rucker. Although no disease centers were found during this evaluation, annosus root rot has been reported in the area for many years. Efforts have been made in recent years to cut out all active centers as they were found. For this reason, and because of storm and southern pine beetle damage, it was difficult to find new infection centers. Some annosus sporophores were found on windthrown trees. Although there appears to have been a great reduction in root rot centers in the past 10 years, this disease will continue to be a problem at Ft. Rucker. This is because the forest soils and sites in this area favor disease development.

Littleleaf was apparently not too much of a problem in this area on shortleaf, although Littleleaf symptoms were noted on scattered trees. The Ft. Rucker area is just beyond the severe Littleleaf belt.

Slash pine had a heavy infection of needle cast. It is believed that this needle cast was *Lophodermella cerina* Darker, but the sample collected on this trip was not far enough advanced to be

confirmed. There was a severe outbreak of this needle cast across the South in 1970-71. Needle cast is not known to cause mortality, and most of these pines should appear normal by late summer.

Recommendations -

1. As management plans allow, remove mature and over-mature timber to reduce insect and disease losses.
2. Consider tree species selection as follows:
 - a. In chronically wet sites, regenerate to hardwoods. Pines would be constantly under stress and susceptible to southern pine beetle attack.
 - b. Establish longleaf and shortleaf pine on appropriate sites. These tree species are more resistant to fusiform rust than are loblolly and slash pine.
3. Consider the following for direct control of the southern pine beetle. These are listed in order of priority.
 - a. Removal of infested trees by commercial sale (salvage) or administrative use.
 - b. Piling and Burning.
 - c. Chemical control.
4. Other disease management considerations are:
 - a. Whenever any cutting is done, all pine with fusiform stem cankers should be marked for removal.
 - b. When possible, plan cutting for the hot summer months in order to reduce annosus root rot stump infection.
 - c. When cutting plantations and there is no evidence of annosus root rot, use powdered borax on the freshly cut stumps to prevent stump infection.